



**TETRA TECH**

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**To:** Hanh Shaw, U.S. Environmental Protection Agency, Region 10  
**From:** Gene Weglinski, Tetra Tech  
**Subject:** **Beaufort and Chukchi Seas General Permits Anticipated Discharge Rates**  
**Date:** May 24, 2010  
**Cc:** Tim Mayers, U.S. Environmental Protection Agency, Region 10

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Shell submitted a number of Notices of Intent (NOIs) for coverage under the current Arctic NPDES general permit. We have reviewed the NOIs and provide the following tables which summarize the volumes of individual and cumulative discharges. Table A presents the discharge volumes considered in the existing (previous) Ocean Discharge Criteria Evaluation (ODCE) as well as the discharge volumes proposed for the new (proposed) ODCE. The latter numbers are based on the data as presented in the NOIs provided by EPA. Note that some of the values in the Crackerjack NOI appear to entered on the wrong line of the table submitted in the NOI based on the same discharges reported in the other NOIs. We have corrected the apparent error in our summary. Also note that the NOIs for the Crackerjack, Shoebill C and Burger C sites include discharges 012 and 013 separately while the remaining NOIs only report a discharge for 012; however the total volume for the combined 012 (Excess Cement Slurry) and 013 (Mud, Cuttings, Cement at Sea Floor) discharges is the same as those NOIs that only reported a discharge for 012.

Included are two additional tables: Table B identifies the limitations and prohibitions from the Gulf of Mexico NPDES general permit for exploration and production and Table C presents the volumes of discharges that were analyzed in the 2003 Ocean Discharge Criteria Evaluation developed for the Eastern Gulf of Mexico Continental Shelf NPDES general permit.

**Table A – Discharge Data from the Existing ODEC and Proposed ODCEs based on NOI data (corrected for errors in Crackerjack NOI)**

<i>Existing ODCE</i>				
Type of Discharge	Beaufort		Chukchi	
	Range	Total Volume	Range	Total Volume
Drilling Cuttings and Fluids	1,086 – 11,399 bbl (Monthly Average)	52,445 bbl (MA)	--	3,040 bbl <sup>[1]</sup>
Deck Drainage	12 -78,193 gpd	228,479 gpd	[2]	[2]
Sanitary and Domestic Waste	517 – 75,150 gpd	169, 967 gpd	[2]	[2]
Excess Cement Slurry	43 – 9,129 gpd	15,932 gpd	[2]	[2]
Desalination Unit Waste	174 – 140,000 gpd	248,244 gpd	[2]	[2]
Boiler Blowdown	6.2 – 586 gpd	751.2 gpd	[2]	[2]
Non-contact Cooling Water	202,380 – 209,435 gpd	411,815 gpd	[2]	[2]
Uncontaminated Bilge Water	195 – 270 gpd	465 gpd	[2]	[2]
Uncontaminated Ballast Water	40 – 2,254,000 gpd	2,267,197 gpd	[2]	[2]
Fire System Test Water	43 – 370 gpd	773 gpd	[2]	[2]
Mud, Cuttings, Cement at Seafloor	94,000 gpd	94,000 gpd	[2]	[2]
<i>Proposed ODCE – NOI Data (Corrected)</i>				
Drilling Cuttings	3,485 – 3,395 bbl/day	6,880 bbl/day	3,070 – 3,310 bbl <sup>[3]</sup>	15,780 bbl <sup>[3]</sup>
Spent Drilling Fluids	2,755 - 2,870 bbl/day	56,252 bbl/day	135 – 156 bbl/day <sup>[4]</sup>	713 bbl/day <sup>[4]</sup>
Cuttings from Water Base Drilling Fluid Interval	1,638 - 1,827 gpd	110,313 gallons total discharged <sup>[5]</sup>	3,696 – 4,620 gpd <sup>[4]</sup>	20,202 gpd <sup>[4]</sup>
Deck Drainage	210 gpd	420 gpd	210 gpd	1,050 gpd

Sanitary and Domestic Waste	4,620 gpd	9,240 gpd	4,620 gpd	23,100 gpd
Excess Cement Slurry	60,480 gpd * 2 occasions	120,960 gpd * 2 occasions	6.3 - 60,480 gpd * 2 occasions <sup>[6]</sup>	120, 966 gpd * 2 occasions <sup>[6]</sup>
Desalination Unit Waste	5,250 gpd	10,500 gpd	5250 gpd	26,250 gpd
Cooling Water	1,830,000 gpd	3,780,000 gpd	1,890,000 gpd	9,450,000 gpd
Uncontaminated Bilge Water	1,050 – 1,201 gpd	2,251 gpd	1,134 gpd	5,670 gpd
Uncontaminated Ballast Water	26,040 gpd	52,080 gpd	26, 040 gpd	130,200 gpd
Fire System Test Water	0 gpd	0 gpd	0 gpd	0 gpd
Blow Out Preventer(BOP) Fluid	1,764 gallons <sup>[7]</sup>	3,528 gallons <sup>[7]</sup>	1,764 gallons <sup>[7]</sup>	8,820 gallons <sup>[7]</sup>

<sup>[1]</sup>At time of writing, there were no currently operating leases in the Chukchi Sea; total numbers are estimates.

<sup>[2]</sup>Deck drainage numbers were not distinguished for Beaufort and Chukchi. Assumed Beaufort because there were no active leases in Chukchi.

<sup>[3]</sup>Determined from discharge rate and approximately 5 days of discharge.

<sup>[4]</sup>NOIs did not indicate the number of days of discharge.

<sup>[5]</sup>Total amount discharged calculated as 43.5 bbl/day\* 29 days plus 39 bbl/day\*35 days.

<sup>[6]</sup>Three NOIs (Burger C, Crackerjack, and Shoebill C) presented discharge rates for excess cement as “mud, cuttings, cement at seafloor” and for “excess cement slurry” at rates of 1.5 bbl/day and 0.15 bbl/day, respectively, for two occasions. Two NOIs (Burger F and Burger J) presented discharge rates for “excess cement” at 1 bbl/min for 2 occasions.

<sup>[7]</sup>The amount of total BOP fluid discharged calculated as 7 bbl/day\*1 day/test\*6 tests per well\*42 gallons per bbl.

**Table B. Gulf of Mexico General Permit (2007) Limitations and Prohibitions**

Type of Discharge	Range	Total Volume	Rate	Prohibitions
Drilling Cuttings and Fluids	--	--	1,000 bbls/hour for fluids or $R = 10^{[3 \text{ Log } (d/15) + T_i]}$ , for facilities located near areas of biological concern.	No discharge of oil-based, inverse emulsion or oil-contaminated fluids or non-aqueous based fluids. No discharge of cuttings generated using oil-contaminated drilling fluid or fluid to which diesel oil has been added.
Deck Drainage	--	--	--	No free oil
Sanitary and Domestic Waste	--	--	--	No floating solids or foam
Excess Cement Slurry	--	--	Monitor discharge rate if treatments chemicals are added.	No free oil
Desalination Unit Waste	--	--	Monitor discharge rate if treatments chemicals are added.	No free oil
Boiler Blowdown	--	--	Monitor discharge rate if treatments chemicals are added.	No free oil
Non-contact Cooling Water	--	--	Monitor discharge rate if treatments chemicals are added.	No free oil
Uncontaminated Bilge Water	--	--	Monitor discharge rate if treatments chemicals are added.	No free oil
Uncontaminated Ballast Water	--	--	Monitor discharge rate if treatments chemicals are added.	No free oil
Fire System Test Water	--	--	Monitor discharge rate if treatments chemicals are added.	No free oil
Mud, Cuttings, Cement at Seafloor	--	--	Monitor discharge rate if treatments chemicals are added.	No free oil

***Table C. Eastern Gulf of Mexico Outer Continental Shelf ODCE (2003)***

<b>Type of Discharge</b>	<b>Range</b>	<b>Total Volume</b>
Drilling Cuttings and Fluids	1,184 – 1,901 bbl/day	SBF not discharged; WBF only excess dilution volume discharged.
Deck Drainage	2100 - 6510 gpd	N/A
Sanitary and Domestic Waste	N/A	N/A
Excess Cement Slurry	N/A	N/A
Desalination Unit Waste	10080 gpd	N/A
Boiler Blowdown	N/A	N/A
Non-contact Cooling Water	N/A	N/A
Blowout Preventer Fluid	2814 – 13188 gpd, when testing	N/A
Uncontaminated Bilge Water	2940 – 26040 gpd	N/A
Uncontaminated Ballast Water	2940 – 26040 gpd	N/A
Fire System Test Water	N/A	N/A
Mud, Cuttings, Cement at Seafloor	N/A	N/A